WHOI
DOCUMENT
COLLECTION

60-28
Copy 1

WOODS HOLE OCEANOGRAPHIC INSTITUTION

Reference No. 60-28

GRAVITY INVESTIGATIONS

August 1 - October 31, 1959

November 1959

WOODS HOLE, MASSACHUSETTS

WOODS HOLE OCEANOGRAPHIC INSTITUTION

Woods Hole, Massachusetts

This report, not necessarily in final scientific form, is intended only for the internal management uses of the Contractor and the Air Force.

Reference No. 60-28

GRAVITY INVESTIGATIONS

August 1 - October 31, 1959

PROGRESS REPORT

Quarterly Report No. 12

Work carried out under Contract AF19(604)2157
with the Geophysics Research Directorate
Air Force Cambridge Research Center
Air Research and Development Command

NOVEMBER 1959

APPROVED FOR DISTRIBUTION Paul M Fye
Director

GRAVITY MEASUREMENTS

Work carried out under Contract AF19(604)2157 with the Geophysics Research Directorate Air Force Cambridge Research Center, Air Research and Development Command.

Investigations Being Undertaken and Research Completed.

Pendulum Program:

During subject period Dr. Rose completed the rebuilding of the recording system for the pendulums so that visual records could be obtained with a standard oscillograph type camera. The first test runs with this equipment showed that the accuracy of observations was materially improved in that the period could be read with greater precision than was obtainable with the Berkeley counter direct read out system. A field run was made the last of October, which included observations at the following sites:

Madison, Wisconsin
Washington, D. C.
Charleston, S. C.
Key West, Florida
Lamont Geological Observatory, N. Y.
Ottawa, Canada

Measurements were taken on a repeat basis on the return leg at each site and the reliability on the basis of a statistical analysis of the results was approximately 0.1 mgal.

Preliminary results were received for the measurements obtained by Mr. Jackson of Cambridge University, England with the Cambridge pendulums for his observations at Teddington, Singapore, Darwin and Melbourne. These appear to be good and agree within 0.2 mgals with those obtained earlier with the Gulf pendulums.

Gravimeter Program:

Mr. Behrendt completed the check series of measurements at airports using the high range LaCoste instrument, and it appears this network has a reliability of 0.2 mgals.

During the time of the International Gravimetric Commission meeting in Paris in September, Dr. Woollard made a gravity connection between Washington, London and Paris, and tied out the local gravity bases in the Paris area.

Conferences Attended:

Dr. Woollard attended the meeting of the International Gravimetric Commission in Paris and informally reported on the program supported under this contract. One recommendation of the Commission was that the program of dual measurements with the Cambridge and Gulf pendulums at common sites on a world wide basis that has been suspended under Air Force Cambridge Research Center auspices should be completed.

Gravity Map of the United States:

The data for the gravity map for the United States is still coming in and the active field program of the United States Geological Survey has materially helped in filling in areas having no coverage. A grant from the National Science Foundation to the University of Wisconsin has also been of great assistance in carrying out this part of the program.

Personnel:

Principal investigator -	G. P. Woollard
Physicist -	J. C. Rose
Observer -	J. C. Behrendt
Computers -	Delia Lavin
	Alice Nilsson
Draftsman -	David C. Johnson

Budget:

Funds on hand - $19,000 (deficit). This deficit was not brought to light until October and was occasioned by delays in receiving travel costs, some of which extended back over a year. The University of Wisconsin agreed to the transfer of $4,000 of other research funds towards offsetting this deficit. The program has been carried entirely since about October 1 on University research funds.

Remarks:

As the program is not to be supported in the future by Air Force Cambridge Research Center, a request has been made to the National Science Foundation for a grant to complete the project. This support is subject to ACIC or 1381st Geodetic Squadron support. As yet no word has been received from either group.

Final Report:

In view of the significance of this program, the Final Report is being made as complete as possible, and not only are the Gulf pendulum results to be reported but also a statistical evaluation of all other pendulum observations at the same sites, reduced in the same manner, and weighted on a statistical basis in order to give a weighted mean at each site based upon all data. This procedure should resolve the standardization problem over most of the world.